Roy F Weston, Inc
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

MANAGERS DESIGNERS/CONSULTANTS

MEMORANDUM

DATE: 4 November 1998

TO: David Bennett, WAM, U S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Total Organic Carbon Analysis Results
Laboratory Batch K9805449
Site· Duwamish River

WORK ASSIGNMENT NO : 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO.. 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle
Kevin Mundell-Jackson, Database Management, WESTON

The quality assurance review of 20 sediment samples, laboratory batch K9805449, collected from the Duwamish River has been completed. The sediment samples were analyzed for total organic carbon (TOC) using EPA Method 9060 by Columbia Analytical Services of Kelso,WA. The samples were numbered

98334008	98334009	98334010	98334011	98334012
98334013	98334014	98334015	98334016	98334017
98334018	98334019	98334020	98334021	98334022
98334023	98334024	98334025	98334026	98334027

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control specifications described in the technical specifications of the laboratory subcontract.

1. Holding Times

   All samples were cooled with ice or refrigerated from the time of collection until analysis A maximum holding time of 14 days was specified in the Duwamish River Sampling and Analysis Plan. All TOC analyses were performed within 9 days of sample collection

2. Instrument Detection Limits

   All laboratory reporting limits are equal to or less than the project-required detection limits of 200 mg/kg.

3. Initial Calibration

   A calibration verification check was analyzed prior to sample analysis. Results met control limits of 90 to 110 percent recovery of the true value.

4 Continuing Calibration Verification

   Continuing calibration checks were performed initially and after every 10 samples, with one exception. Thirteen samples were analyzed between CCV4 and CCV5 Results for all continuing calibration checks met control limits of 90 to 110 percent recovery of the true value

5. Laboratory Method Blanks

   Laboratory method blanks were prepared and analyzed with each batch of samples No analytes were detected above the project-required detection limit in laboratory method blanks.

6 Laboratory Control Sample

   The recoveries for TOC were within the control limits of 80 to 120 percent.

7. Laboratory Duplicate Sample Analysis

   The relative percent difference (RPD) between duplicate analytical results was within the QC limit of 35 percent

8. Matrix Spike Analysis

Matrix spike recoveries for all analytes met QC criteria of 70 to 130 percent.

9. Field Duplicate Analysis

Samples 98334015 and 98334016 were "blind" field duplicate samples The relative percent difference between duplicate results was within project limits of less than 35%.

10. Sample Analysis

A cursory review of raw data was performed. Review of raw data revealed that thirteen samples were analyzed between CCV4 and CCV5, which exceeds the QC criterion requiring CCV analysis after every 10 samples. As CCV results were acceptable, no qualifiers were assigned as a result of this exceedance. Additionally, it was noted that triplicate analyses were not performed for this SDG

11. Laboratory Contact

No laboratory contract was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U - The material was analyzed for, but was not detected

UJ - The analyte was not detected The associated quantitation limit is an estimate because quality control criteria were not met

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported were less than the quantitation limit or lowest calibration standard

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805449
Date Collected: 8/12/98
Date Received: 8/13/98

Carbon, Total Organic

Units PERCENT
Basis Dry

Prep Method NONE
Analysis Method. 9060M
Test Notes

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
98334008	K9805449-001	0.05	0 006	1	NA	8/21/98	3 37	
98334009	K9805449-002	0 05	0 006	1	NA	8/21/98	2 43	
98334010	K9805449-003	0 05	0 006	1	NA	8/21/98	4.69	
98334011	K9805449-004	0 05	0 006	1	NA	8/21/98	4 48	
98334012	K9805449-005	0 05	0 006	1	NA	8/21/98	9 23	
98334013	K9805449-006	0.05	0 006	1	NA	8/21/98	2 08	
98334014	K9805449-007	0 05	0 006	1	NA	8/21/98	2 43	
98334015	K9805449-008	0 05	0.006	1	NA	8/21/98	1.90	
98334016	K9805449-009	0 05	0 006	1	NA	8/21/98	1 92	
98334017	K9805449-010	0 05	0 006	1	NA	8/21/98	1 75	
98334018	K9805449-011	0.05	0 006	1	NA	8/21/98	2.03	
98334019	K9805449-012	0 05	0 006	1	NA	8/21/98	2 26	
98334020	K9805449-013	0 05	0.006	1	NA	8/21/98	2.19	
98334021	K9805449-014	0 05	0 006	1	NA	8/21/98	2 49	
98334022	K9805449-015	0 05	0 006	1	NA	8/21/98	2 64	
98334023	K9805449-016	0.05	0 006	1	NA	8/21/98	1 67	
98334024	K9805449-017	0 05	0 006	1	NA	8/21/98	2 77	
98334025	K9805449-018	0 05	0 006	1	NA	8/21/98	2 46	
98334026	K9805449-019	0 05	0 006	1	NA	8/21/98	2 56	
98334027	K9805449-020	0 05	0 006	1	NA	8/21/98	2.31	
Method Blank	K9805449-MB	0 05	0 006	1	NA	8/21/98	0.007	J

M Modified

Approved By. _____ Date 9/17/98